Municipal Asset Management System

Trip Report, Bulgaria, 19 August – 28 August 2006

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Abbreviations

ALM..... Application Lifecycle Management
BGN..... Bulgarian Leva (currency)
CD-ROM..... Compact Disc Read Only Memory
CDRW..... Compact Disc Read Write
CPRA..... Cadastre and Property Register Act
CRAS..... System for Civil Registration and Administrative
CSC ..... Citizen Service Center
DVD-R ..... Digital Versatile Disc Recordable format
EGN..... Bulgarian national identification number for individual citizens
ESGRAON ..... Unified System for Civil Registration and Service of Citizens
EU ..... European Union
FLGR..... Foundation for Local Government Reform
GB..... Gigabyte
GHz..... Gigahertz
GIS..... Geographic Information System
GoB..... Government of Bulgaria
ICT ..... Information and Communication Technology
IDG..... International Data Group
IDE..... Integrated Development Environment
IT ..... Information Technology
LAN ..... Local Area Network
LGI ..... Local Governance Initiative
MB..... Megabyte
MPA..... Municipal Property Act
MSDE ..... Microsoft Data Engine
MVL..... Microsoft Volume License
RTI ..... RTI International
SQL..... Structured Query Language
UDA ..... Urban Development Act
UNDP..... United Nations Development Program
USAID..... United States Agency for International Development
XML..... eXtensible Markup Language

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Executive Summary

Municipal governments in Bulgaria continue to retain and manage significant numbers of residential, commercial, and public properties. Municipalities need better systems for managing these properties. In particular, they need tools to evaluate financial efficiencies and appropriate use, and to support better municipal and regional land-use planning. Municipalities also need tools to meet new national requirements for property registers, and to improve transparency of property use to combat corruption. Bulgaria is entering a booming real-estate market phase. The Local Government Initiative (LGI) would like to provide the needed management and reporting tools to as many municipalities as quickly as possible.

This report describes the results of work carried out work in Bulgaria from 19 August through 28 August for the Local Government Initiative (LGI). During this second short-term visit by the Author on this task, the Author reviewed the status of software development and the performance of the software development subcontractor, and visited four pilot municipalities.

Software development has adhered closely to the subcontractor's scope of work, and the technical quality of work is good. Development is approximately 1.5 months behind schedule due to the addition of two challenging, but valuable additions to the scope of work. The project no longer has the resources for further delays or additions to the scope of work. The software developer continues to work productively with the IT Director in Stara Zagora, but LGI needs to exercise consistent, proactive project management for the remainder of this task to keep it on track and on schedule.

The software subcontractor is dedicated to the technical quality of the work, and has sufficient financial interest in continuing to provide technical support and software upgrades after the end of the LGI. There is currently no comparable municipal property management software available, despite strong demand from municipalities.

Karlovo and Gabrovo are generally supportive and are ready to participate in this effort. Dryanovo does not have the capacity to make effective use of the software. Veliko Turnovo is a good candidate to replace Dryanovo as a pilot municipality, and is enthusiastic about participating. The LGI Task Manager and software developers need to engage all pilot municipalities in testing and development.

The following actions need to be taken to make sure this task meets its objectives:

1. Amend the subcontract with MAG-GIS by extending the period of performance to the end of calendar 2006, and if necessary adding funds to transfer existing electronic data in the four selected pilot municipalities.

2. Conduct weekly project status review meetings in Stara Zagora with the IT director and software developers to check progress against the project plan and to make any adjustments necessary to keep this task on schedule.

3. Institute a change management procedure that uses detailed written documents to describe changes and clarifications agreed to by all parties in weekly project status review meetings.

4. Insisting that the software developers spend enough time on each pilot municipality to understand their unique requirements and issues concerning transfer of existing electronic data to the new system.

5. Obtain support from pilot municipalities for early testing by users, and insist that the software developers submit modules for testing by users as quickly as possible.

6. Draft a document, agreement, or memorandum of understanding with Veliko Turnovo sufficient to gain their agreement to serve as a pilot municipality. This is needed before the software developers can begin working with this municipality.

7. Communicate with each pilot municipality regularly and frequently to update them on the status of the project, the project schedule, and actions they need to take to prepare for testing, training, data transfer, installation, and complete transfer to the new system. Visit each pilot municipality as often as possible. Involve personnel in each pilot municipality in testing the software at the earliest possible point. Make sure they see their work and comments reflected in the software. Give them public recognition for being a part of the development process. Identify strong supporters in each municipality and give them opportunities to promote the use of the system to colleagues in their own municipality, and in other municipalities through public fora, such as the conference of the National Association of Municipalities.

8. Produce an information document to provide pilot municipalities with basic information about the LGI and this task. This document should be sufficient to answer all common questions, and should give personnel in each municipality the information they need to gain the support of other personnel and officials within their municipality. This information document should also give municipalities important information they need to prepare for training, data conversion, and software installation.

9. Draft a User Guide in a form that can be used for online help and as a printed document. The first draft of this document should be completed as software modules are completed. Ideally the first draft of this User Guide should be completed when the software is ready for beta testing by the pilot municipalities.

10. Guide the software developer in producing simple written guidelines for user testing during the beta test period. These guidelines should explain to users what operations they should perform using the software, what data they should use for testing, and how they should document their findings and suggestions for the developers.

11. Revise the preliminary training plan developed in early 2005, develop this into an operational document, and discuss with each pilot municipality. This will provide pilot municipalities and LGI with information needed to schedule and prepare for this important training.

12. The IT Director in Stara Zagora expressed willingness to present the municipal property management software at the conference of the National Association of Municipalities on 12-14 October 2006. This should be Confirmed with the IT Director and the software developer their commitment to introducing the software at the the National Association of Municipalities on 12-14 October 2006. Decide who should be present at the presentation. During beta testing try to identify personnel in other pilot municipalities who might participate in this presentation.

1. Introduction and Background

This activity continues previous Local Governance Initiative (LGI) efforts to develop an Asset Management Methodology at municipal and regional levels. These activities included developing Simple Excel-based municipal property databases that track existing properties, associated costs and revenues, market monitoring procedures, development of property management plans, and overall property management strategy. Experience indicates that a relational database system is a more appropriate tool when dealing with large numbers of properties. When properly such a tool can help foster good management practices based on market principles to make for efficient and appropriate use of municipal property.

The development of the database will build on the previous work done in the municipality of Stara Zagora and experience gained by LGI and the municipality in using these applications. Previous innovative practices in the field of asset management in Stara Zagora include the development of a database for monitoring revenues from municipal properties and a database for keeping truck of Municipal Property deeds. These products, although well developed in themselves, need to be re-adjusted to become part of a general integrated database in which the municipal property itself is the leading object.

During a previous visit[1], the Author evaluated the technical quality of work done, the technical skills of the software developers, and the advisability of contracting the developers to integrate their work and add significant functionality supporting improved property management and transparency. The Author also advised LGI concerning options for software licensing and continued sustainable support for the software.

The Author then worked with LGI Task Manager Angel Markov to develop a detailed scope of work for development of integrated municipal property management software. The LGI Task Manager then obtained a proposal from the software developer and negotiated a subcontract for software development. This contract was concluded on 1 February 2006, and the subcontractor then began work.

Under LGI supervision, the software developer is working closely with the municipality of Stara Zagora to develop an integrated municipal property management system. The LGI is contributing expertise to the design of financial analysis and reporting components, as well as publication of accurate and current property registers that are accessible to the public. Through the LGI Stara Zagora and three other selected pilot municipalities will receive the software, training, data conversion services, and one year of software maintenance support services. The software subcontractor will own all intellectual property rights to the software, and will have the right to charge for services to pilot municipalities beyond the first year paid for by the LGI, as well as the right to all revenues from licenses and related services sold to other municipalities. The LGI will work with the subcontractor and pilot municipalities to promote the use the system by other municipalities. In effect, the LGI is providing venture capital for the development of the system with the objective of producing a locally sustainable system to improve the efficiency and transparency of municipal property management throughout Bulgaria.

Following sections of this report summarizes the Author's observations during visits to each of the pilot municipalities, the Author's observations and conclusions regarding each element of the scope of work, and next steps.

[1] Cressman, G., Trip Reportf, 2 February – 17 February, 2005, USAID Local Government Initiative, 18 pages.

2. e-Government Context

e-Government strategy in Bulgaria began developing in the late 1970's, but did not begin to develop strong momentum until 2001. The Coordination Center for Information and Communication, and Management Technologies, established in 2002 under the auspices of the Council of Ministers and with the support of the United Nations Development Program (UNDP), is charged with coordinating policies and strategies, including e-government efforts. As in many countries, national systems have been developing from center to edges, beginning with central ministries, then spreading to regional offices, and finally local government offices. Beginning in 2003, the Cabinet adopted a national e-government strategy, and the national government began offering online services to citizens.

Bulgaria's accession to the European Union (EU) has been key driver of e-government policy, standards, and services. The EU has strong interest in e-government systems that increase transparency and reduce the corruption that plagues government administration in Bulgaria. In May 2006 the Minister for State Administration and Administrative Reform announced a new effort to use e-government to increase transparency and fight corruption.

Constraints on e-government development have included an incomplete legal framework, communication infrastructure, difficulty of retaining skilled Information Technology (IT) personnel in public service, weak IT skills among civil service personnel in smaller municipalities, lack of standards and coordination, and lack of organizational development and process re-engineering to support e-government services to citizens. More than 70 national registers and information systems were developed, but suffered from a lack of core integration standards and coordination.[2] Online services currently include changes in address registration, access to voter registration status and information, company registration, vehicle registration, social insurance contributions and health insurance status, and corporate payment of Value Added Tax.

Establishing the identities of citizens accurately and easily is a key e-government issue. The System for Civil Registration and Administrative Services (CRAS), founded in 1978, has developed a system that assigns a unique identifier to each citizen and maintains a secure centralized database the contains a personal registration file for more than eight (8) million living and two (2) million diseased Bulgarian citizens. Beginning in 2000 the system was redesigned as a web application, and now provides secure web access to this information for authorized government personnel, and secure access to data in XML format by other authorized e-Government applications. Citizens have secure access to their own data, including election roles and assigned voting location. Information in the CRAS system is maintained by more than 1,000 civil service employees throughout 265 municipalities processing more than four million record changes each year.

The introduction of e-government services at the municipal level has until recently progressed largely in the absence of national government standards and guidance. USAID's LGI and the Foundation for Local Government Reform (FLGR) pioneered the concept of Municipal Customer Service Centers (CSCs) or "One Stop Shops" providing e-government services to citizens in Bulgaria. Some 83 (31 percent) have established "one-stop-shop" citizen services centers for civil registration, payment of fees and rents, request for building permits, and other basic services. In June 2006 the U.S. Ambassador to Bulgaria and the Mayor of Sofia opened citizen service centers in Sofia's Studentski, Mladost and Vazrazhdane districts.

Roughly one quarter of Bulgarian municipalities now have public web sites, some offering online services. Nearly all software applications in use at the municipal level are developed by local or regional private sector providers, and quality varies widely. Most municipal

[2] Bulgaria E-government Strategy, Development Gateway Foundation, 2003, 32 pages.

administrations have a Local Area Network (LAN) and an Internet connection, and have adequate Information Technology (IT) support personnel for this infrastructure.

In April 2000 the Bulgarian Cadastre and Property Registry Act establish key property registration requirements. The system remains a deed registration system, but the act requires assignment of unique cadastre identifiers to all real properties, and publishing of property registers. Municipalities are struggling to cope with the requirements of new legislation. Only a few of the larger municipalities have digital cadastre systems. None of the pilot municipalities screened for the current LGI task have deed registration systems that meet the requirements of the Bulgarian Cadastre and Property Registration Act, and none have integrated municipal property management and digital cadastre systems.

3. Relationship to other USAID Activities

Work by the LGI to create an integrated municipal property management system build directly on the successful USAID LGI effort to create a locally sustainable citizen service center movement, and to improve financial management practices in local government. This effort also builds on and complements USAID efforts to increase transparency and reduce corruption, such as the Bulgaria Open Government Initiative. USAID support for projects to strengthen civil society, increase citizen participation in democratic governance, and bridge the digital divide, such as the Chitalishte Project, will also help increase citizen access to property registers published on municipal web sites.

4. Visits to Pilot Municipalities

During this visit the Author traveled with the LGI Task Manager to meet with relevant personnel and public officials in the following municipalities (in the order visited):

- Stara Zagora
- Karlovo
- Veliko Turnovo
- Gabrovo

Prior to this visit the municipality of Dryanovo was also considered as a pilot municipality for the property management system. Based on assessment by the LGI Task Manager, Dryanovo does not currently have the capacity to make effective use of the system. Veliko Turnovo is being considered as a replacement pilot municipality.

Exhibit 1 shows the location of pilot municipalities in Bulgaria. Annex A contains a list of principal persons contacted in each municipality. Annex B contains a list of meetings attended by the Author during this trip. Annex E contains a list of references consulted, and Annex F contains a list of reference web sites. The following sections summarize the main findings of each visit. The remainder of this report discusses these findings in more detail.

Exhibit 1Map of Bulgaria Showing the Location of Pilot Municipalities

4.1. Stara Zagora

The Author visited Stara Zagora with the LGI team on 22 and 23 August, 2006. During this visit the Author met with the IT Director, the Deputy Mayor for Property Management and Economic Development, The Deputy Mayor for Public Services, Law and Order, and the software development subcontractor. The tone of the meetings was strongly positive. The Deputy Mayor for Municipal Property Management and Economic Development expressed strong support for testing by personnel in the relevant municipal departments, and for resolving resistance from the Accounting Department. The IT Director expressed interest in presenting the software at the National Association of Municipalities conference in October.

The IT Director said that her major concern was adjusting the project schedule to complete the software as soon as possible. She explained that the delay in completing the core server modules was necessary to incorporate key Government of Bulgaria (GoB) standards. The first major change was to enable the system to import data directly from the civil registry. This provides the system with access to accurate identity and address information through the ESGRAON (Unified System for Civil Registration and Service of Citizens)[3] desk of the citizen service center. This data is transmitted regularly to the Bulgarian Electronic Information System for Civil Registration and Administrative Services (CRAS), which provides data for election roles and other key government systems. The security and confidentiality of this data is of great concern. The second major change was to incorporate standards established by the National Cadastre Agency. Use of unique cadastre identifiers on property deeds is required by law, and incorporation of these standards makes it possible to integrate the system with digital cadastre systems that conform to the national standard.

Kiril Vassilev demonstrated the completed server modules and discussed his work on the Deeds module. Georgi Ivanov demonstrated his work on the revenue and cost modules. The developers stated that the pace of work should increase, now that work on the civil registry and cadastre standards has been completed.

3 ESGRAON (ЕСГРАОН), also known as the System for Civil Registration System and Administrative Services (CRAS), was created in 1977. The system maintains a register for each person in Bulgaria with the following data: EGN (citizen's number similar to the U.S. Social Security number), name, gender, date and place of birth, current and permanent address, and other identifying information. In addition the system includes an official coding system that identifies, classifies, and assigns unique codes to regions, municipalities, cities and villages, roads, and addresses.

The LGI Task Manager led a productive discussion regarding the types of cost and efficiency analyses that should be provided by the system. Participants agreed that data from current systems is insufficient and is generally not used to analyze property management. Deputy Mayor Dimitrov emphasized the need to demonstrate the use of financial information for such analyses to the accounting department.

The Author and LGI Task Manager conducted detailed discussions with the software developer concerning the project schedule, pricing, technical support provisions, plans for roll-out to pilot municipalities, definitions for software deliverables, and deadlines for benchmark deliverables. The results of these discussions are incorporated into following sections of this document.

4.2. Karlovo

The Author and the LGI team visited Karlovo on 24 August. This was the first visit by the LGI to Karlovo since the Author's previous visit in February 2005. Initially personnel from relevant departments in Karlovo expressed concern about the transfer of data from existing electronic systems, user training, and the recurrent cost of the software. These concerns appear to have been addressed somewhat effectively during the discussion, such that meeting participants were much more supportive by the end of the meeting.

Karlovo is now using accounting software produced by a company in Plovdiv. They are very pleased with this software and the support of the company. To the best of their knowledge they are the first user of this software. The Head of the Office of Budget and Finance expressed great interest in having revenue and cost data flow automatically between the property management system and the accounting system.

4.3. Veliko Turnovo

The Author and the LGI team visited Veliko Turnovo on 24 August. This was the first visit by LGI to Veliko Turnovo on this task. Deputy Mayor Botev was immediately interested in the prospect of an integrated municipal property management system, but asked the project to provide him with a written description of the project to clarify key issues, including objectives, project schedule, responsibilities of the various parties, transfer of data from existing systems, training, and recurrent costs to the municipalities. Deputy Mayor Botev quickly arranged for the LGI Team and the software developers to meet with representatives of relevant municipal departments. Since many department heads were on vacation, participants were generally acting heads or second level personnel.

The LGI Task Manager explained the objectives, history, and status of the project. The software developers presented completed server modules and the GiSExplorer digital cadastre system. The reaction of participants was enthusiastic. The only concerns raised were transfer of data from existing systems, and linking the property management system to the existing accounting system. Participants were eager to begin testing the software.

4.4. Gabrovo

The Author and the LGI team visited Gabrovo on 25 August. This was the first visit by the LGI to Gabrovo since early 2005. The LGI Task Manager reviewed the objectives, history, and status of the project. The software developers demonstrated completed server modules and the GiSExplorer digital cadastre system. The participants were very enthusiastic about what they saw, but asked questions concerning data transfer from existing systems, data exchange with their existing accounting system, user training, and the project schedule. Participants were eager to begin testing the software.

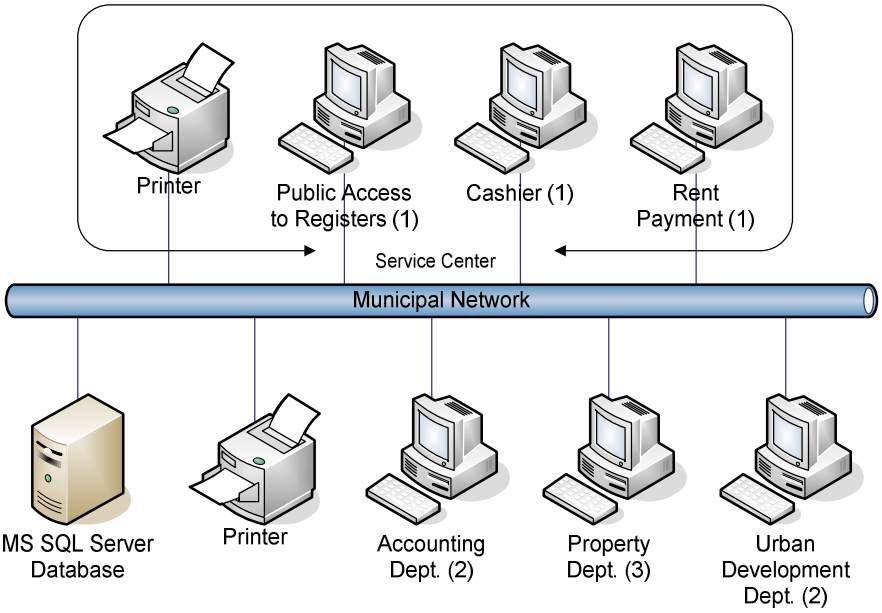
5. Status of Software Development

Review the status, completeness, and quality of work done by subcontractor MAG-GIS with respect to the *Scope of Work, Municipal Asset Management System (MAM)*.

5.1. Suitability for the target computing architecture and environment

The software application is being implemented as a client-server application. Client-server architecture separates the user interface from the database. The client component contains the menus, forms, and other elements that constitute the user interface. The database server is a separate component that typically runs on a separate server with increased processing and data storage capacity. The client component communicates with the database server over a network. For this particular application the client component is being implemented as a Microsoft Windows program that will communicate with a database server over the Local Area Network (LAN) in each municipality, as shown in Exhibit 1.

Exhibit 1 General network schematic showing property management workstations.



Recommended hardware requirements for the property management system are as follows:

Client Desktop or Laptop Computer
Processor Intel Pentium 2GHz
Memory: 512GB
Hard Disk Drive: 40GB
Operating System: Microsoft Windows XP

Database Server
Processor: Intel Pentium 3GHz Dual Core
Memory: 1GB
Hard Disk Drive: 200MB
Backup/Archiving: CDRW/DVD-R
Operating System: Microsoft Windows XP or Windows 2003 Server
Database Server Software: Microsoft SQL Server 2000, SQL Sever 2003, or Microsoft SQL Server Express 2005 (MSDE)

The initial assessment of this project determined that most municipal governments in Bulgaria have a LAN that meets the basic computer and network hardware requirements. It is also possible to install and use the property management system on a single, non-networked (stand-alone) computer, provided the computer has sufficient capacity. Some municipalities may need to upgrade operating systems, purchase the necessary database server hardware, and purchase a license for the database server software. Pilot municipalities have not expressed any serious concern about being able to meet these requirements.

The core database design has been completed and implemented using **Microsoft SQL Sever 2000**. Microsoft SQL Server is a mature, stable database and a strategically important product for Microsoft. With approximately 16.8 percent of the relational database market, SQL Server ranks third in market share behind Oracle and IBM (DB2).[4] Most research concludes that the cost/performance of this database server is significantly better than commercial alternatives such as Oracle. Microsoft SQL Server is available to Bulgarian municipalities through a Microsoft Volume License (MVL) agreement negotiated by the GoB.

The subcontract with MAG-GIS[5] requires them to minimize the effort needed to use an alternate database server, while meeting all other requirements of the application. The database design and implementation delivered to date by MAG-GIS would require some effort to convert to other database servers, including Free and Open Source Software (FOSS) alternatives such as MySQL and PostgreSQL. The Author believes the current implementation is a reasonable compromise between features, performance, security, and cost. It takes advantage of the developers' expertise in SQL Server and GoB volume licensing for Microsoft products.

Procedures for taking advantage of GoB volume licenses for Microsoft products are not clear to many municipalities. According to their IT Director, Stara Zagora requested a Microsoft SQL Server license two years ago and has yet to receive its license. Instead Stara Zagora has been using the Microsoft SQL Server 2000 MSDE (Microsoft Data Engine). This is a free version of Microsoft SQL Server 2000 designed for software developers and for simpler applications. This version of the database server contains some technical and performance limitations. None of these limitations have had any impact on the ability of this free database server software to meet the needs of the municipality. **Microsoft SQL Server Express 2005** is the latest version of this product, and includes fewer restrictions on capacity and performance than previous versions.[6] Evidence indicates that this free version should be more than sufficient for all but the largest municipalities in the country.

The software has been developed using **Borland Delphi**. Delphi is an Integrated Development Environment (IDE) for programmers. The primary language of Delphi is Borland's Object Pascal, but the environment now supports several other languages. Software developers working on the municipal property management system in Bulgaria have years of experience and a high degree of proficiency in using Delphi to produce software. While Delphi has many technical strengths, its weaknesses include limited cross-platform capability, the need to translate third-party library headers into Pascal, and fewer supporting books than several other language alternatives.

[4] Figures from International Data Corporation (IDC), 2005

[5] MAG-GIS is also referred to as Magplan in various project documents. The registered domain for the company is magplan.com.

[6] The generous limitations of this product make it a suitable database for many applications. Express is limited to 1 CPU, 1 GB RAM, and a maximum database size of 4 GB. The product will not slow or restrict its response times due to licensing constraints. SQL Server Express can be installed on a machine with multiple CPUs and RAM in excess of 1 GB, but the database engine will limit scheduler threads to one, meaning only one CPU will be used. Similarly, the buffer pool, where data pages are stored, will only use 1 GB of RAM, regardless of any additional memory available. Enterprise features not supported on SQL Express include Analysis Services, Reporting Services, Data Transformation Services (DTS), and Notification Services. Aside from these restrictions, the SQL Server Express database engine is the same one found in the other SQL products. Triggers, cursors, views, stored procedures, CLR, XML, and TSQL are all supported the same way they are in any other version of SQL Server.

First released in 1995, Delphi has a loyal following among software developers who appreciate its generally excellent engineering and ability to produce software that performs very well. The 10th and latest version, Delphi 2006 supports the Delphi programming language and C++ for the 32 bit Microsoft Windows platform, and Delphi and C# for the Microsoft .NET platform. Delphi 2006 was reasonably stable when shipped and improved further after the first service pack. On February 8, 2006, Borland announced that it would divest itself of its IDE product line to concentrate on the Application Lifecycle Management (ALM) market.

The decline in interest in Delphi is due primarily to the establishment of the Eclipse Foundation and the development of the Eclipse open source software development platform.[7] Established in 2001, the Eclipse Foundation was established to develop a free, open source, and vendor-independent platform for software development tools. As Eclipse has matured, demand for commercial IDEs, such as Borland Delphi, has decreased. Ironically, Borland was a charter member of the Eclipse Foundation.

Borland has now separated its developer tools business, including Delphi, into a separate company. On August 8th, 2006, The Developer Tools Group of Borland Software Corporation announced plans to release new single language versions of its development tools, including Turbo Delphi. Based on the development roadmaps published by the Developer Tools Group, Delphi is likely to continue to be a viable software development tool for at least two to three years. At some point, perhaps in five years, it may be necessary to transfer the client application code from Delphi Object Pascal to the Java or C# language to maintain pace with the evolution of the Windows platform, or to migrate the client application to the Linux operating system.

Reports from the property management system will be created, displayed, printed, and exported using **FastReports**, a software add-on tool designed for Borland Delphi. FastReports is a product of Fast Reports Inc., a Russian firm. This will enable the property management system to generate attractive reports for display and for export in a wide variety of electronic file formats.

Most of the technologies and components used to develop the software have been proven sustainable in Stara Zagora for several years. The architecture and components selected by the subcontractor will result in a system that can be run on a single, non-networked personal computer, or in a client-server network configuration using a shared database. This configuration should be within the technical capacity of Bulgarian municipalities of any size. This combination of components does not result in a web-enabled application. Section 5.4 discusses how updated property registers can be made available by the system to municipal web sites.

5.2. Adjustments to the scope of work since 5 April 2005

The following two significant tasks have been added to the scope of work since 5 April 2005:

1. Compatibility with and the ability to import data from the GoB vital registration system (ESGRAON)

2. Compatibility with standards set by the Cadastre Agency of the Ministry of Regional and Public Works under the Cadastre and Property Register Act (CPRA) of April 2000, and a five-year implementation project sponsored by the World Bank since 2001

These two adjustments add significantly to the value and practicality of the municipal property management system.

[7] http://www.eclipse.org/

The first adjustment enables the system to import data for individual persons, including names, addresses, and national identity numbers (EGN). Updated ESGRAON data is sent to Sofia from each region every two days. Updated data can be imported into the system easily and automatically from the ESGRAON registration desk, which is typically located in the citizen service center of each municipality. This data enables users to easily and accurately identify individuals associated with municipal property transactions.

The second adjustment enables the system to be referenced to the official GoB cadastre system. The Cadastre and Property Register Act (CPRA) of April 2000 stipulates that all types of real property transfers, regardless of type or property, public or private, are subject to registration. Property descriptions in the deed must include a unique real property identifier that links the deed to the national cadastre system. Deeds are to be indexed according to their unique real property numbers. The CPRA describes a modern computerized property registration system, linked with a digital cadastre system, in property registry offices. The national cadastre system, to be administered and managed by 28 regional (oblast-level) offices of the Cadastre agency, will enable accurate correspondence between municipal property records and digital cadastre systems maintained by the municipalities and the Cadastre Agency.

There is great variation in the status of cadastre systems at the municipal level. A few larger municipalities, such as Stara Zagora, have complete and accurate digital systems. These are often maintained by private sector companies, such as MAG-GIS. Most small and medium size municipalities have manual systems that are inaccurate, out of date, and incomplete. To enable municipalities to comply with the CPRA, It is important for the property management system to support standards established by the Cadastre Agency, and to enable the system to be linked directly to a digital cadastre system.

While incorporating these two challenging adjustments has added roughly 1.5 months to the development time, they will add significantly to the usefulness and practicality of the system.

5.3. Status of software development

MAG-GIS is primarily responsible for developing the following modules:

1. Real properties registration and records management
2. Physical and legal entities registration and records management
3. Document management
4. Address management
5. Management of look-up tables or enumeration lists
6. Municipal property deeds registration and records management

Kyril Vassilev is currently the lead systems analyst and programmer for these modules.

MAG-GIS subcontractor Arion is primarily responsible for developing the following modules:

7. Revenues
8. Revenue analysis
9. Costs
10. Cost analysis
11. Municipal property efficiency analysis

Georgi Ivanov is the system analyst and programmer responsible for developing these modules.

MAG-GIS and Arion will work jointly to develop the following module:

12. Data storage management

In software development major benchmark stages in the process are commonly referred to as *alpha version*, *beta version*, *release candidate*, and *Version 1.0*. For the purposes of this project we will not necessarily have one or more release candidate versions of the software. Other benchmark stages will be defined as follows:

Alpha version..... Tested by the software programmers, but not by users.
Beta version..... Released to selected users for structured testing using sample data.
Version 1.0..... The first version released to users for use in production operations.

Annex C summarizes the status of software development. The remainder of this section describes the selection of the database and software platform and the status of software development in more detail.

MAG-GIS has delivered to LGI a copy of the database scheme, table structure, and SQL scripts for creating tables and adding users to the role-based security framework. Role-based security is being implemented using Microsoft SQL Server security. User roles are defined using Microsoft SQL Server Individual user credentials, roles, and module access permissions are stored in separate database tables. User passwords are stored in encrypted form. Once user credentials have been verified at login, users are permitted or denied access to program modules and database tables based on their roles. Access to the various program modules is controlled by the application code. Access to individual database tables is controlled by the database server.

The database design follows best practices for relational database structure normalization. Primary table keys are simple internal integers that are incremented automatically. Table column attributes have been defined with care, and column descriptions have been entered into the database. Column names are generally consistent. Inconsistencies in column names are due to the need to maintain compatibility with official government standards for data in related civil registration and cadastre systems. Tables include columns to collect auditing data needed to track which users entered or deleted individual records. The database is designed such that data records are never actually deleted from storage, but are marked as deleted using a separate table column. The data management module (Module 12) will manage the archiving of deleted records to control database size.

Modules 1 through 6 are currently at the Alpha Version stage. A “server” user interface has been developed that includes all major forms. The server user interface is designed for system administrators. The same forms will be used in a user interface designed for end-users. That user interface will be designed to enable end-users to carry out routine operations easily. The existing forms and user interface are fully functional, well-designed, and consistent. The server user interface is not likely to be obvious for users who need to carry out routine operations. Its multiple overlapping windows may be confusing for users. It is essential for this user interface to be designed with the participation of end-users familiar with routine operations in the relevant municipal departments. A few non-critical bugs were identified during testing. The software developer is aware of these issues. Target end-users in the pilot municipalities appeared to be impressed with the capabilities of these modules.

Modules 7 and 9 are also at the Alpha Version stage. These modules are built on a powerful and flexible database structure. The database structure and user interface are enhanced versions of the application currently used in Stara Zagora for managing municipal rental properties. This structure and user interface should enable these modules to adapt to a wide variety of changing requirements without additional custom programming for each municipality. These modules reflect experience gained from the existing rents application in Stara Zagora.

Modules 8, 10, and 11 have not yet been written. Some information has been gathered from pilot municipalities to help in designing these modules.

5.4. Ability to provide public access to data

In addition to establishing the National Cadastre Agency, the Cadastre and Property Register Act (CPRA) of April 2000 requires property registers to be publish so they are publicly available. The Municipal Property Act (MPA) specifies the contents of the register. The Urban Development Act (UDA) also describes the contents of the register for green areas. Registers that should be public include the following:

- Register of public municipal property[8]
- Register of private municipal property[9]
- Register of municipal housing property
- Register of green areas
- Register of sports facilities
- Register of forests and agricultural land

This is a fundamental step towards reducing corruption in the management of public property. Ideally the registers should be available to the public via one or more computers in the citizen service center of each municipality, as shown in Exhibit 1, as well as on each municipality's public web site. While it should also be possible to print the registers, the number of properties and property transactions may make this impractical in most municipalities.

Annex D is a list of municipalities with citizen services centers and official public web sites. Based on data from the Foundation of Local Government Reform, 83 municipalities have citizen service centers. Of these, 63 have official public web sites. The software used in citizen service centers varies widely, as does the technology used for municipal web sites. If the municipal property management system generates updated property registers regularly in an electronic form that can be displayed by any web site, most municipalities should be able to publish these registers easily.

The Author and LGI Task Manager Angel Markov discussed technical implementation of this requirement with the software developers. The municipal property system will automatically generate property registry reports in HTML format in a specified folder or directory of the database server. The contents of the registry report will contain approximately ten (10) fields, as specified by the GoB. The software may generate several reports to make it easier for citizens to identify property that has recently changed status or changed hands. To publish these reports, a municipality may copy them to another computer, and then link to the report files from the municipality's public web site. This is a simple, flexible solution that should be within the technical capacity of any municipality.

5.5. Handling of confidential data

MAG-GIS, the software development subcontractor, has access to confidential data of government and citizens for system analysis, design, testing, validation, and conversion to the new system. Currently this data is for Stara Zagora. MAG-GIS will also need access to confidential data from other pilot municipalities. This raises legal issues for the municipality's and the subcontractor. The Author and LGI Task Manager Angel Markov discussed this issue with the IT Director in Stara Zagora, as well as with Deputy Mayor Botev in Veliko Turnovo. MAG-GIS has dealt with this issue before in Stara Zagora, and has developed a strong trust relationship with this municipality. Other municipalities may require a signed document specifying legal responsibilities for the handling of this data. The subcontractor is aware of this. The LGI may need to help MAG-GIS negotiate such a document with each pilot municipality.

5.6. Ability to interact with related systems, such as cadastre

The correspondence between the property management system and cadastre systems has been discussed in §4.2. The database and software are currently compatible with standards

[8] Public property that cannot be sold, such as a school

[9] Public property that can be sold

established by the National Cadastre Agency. This meets the requirements of the CPRA, and makes it possible to integrate the system with a digital cadastre system.

MAG-GIS has implemented comprehensive digital cadastre for Stara Zagora using GiSExplorer, and advanced Geographical Information System (GIS) product developed and sold by MAG-GIS. The LGI project does not have the resources to integrate GiSExplorer with the property management system. Instead, MAG-GIS plans to complete this work in a future version of the system, and to offer digital cadastre and geodesy services to municipalities as options.

5.7. Compliance with technical requirements in the original scope of work

The Author reviewed the existing status of the database and software modules against the technical scope of work developed in April 2005. As described in previous sections, work done to date complies with all requirements in the original scope of work. As described in §4.2, cost, revenue, and financial analysis and reporting modules have not yet been completed. Progress has been made on cost and revenue modules, but detailed specifications for financial analysis and reporting have not yet been completed.

6. Status of Plans for Testing, Data Transfer, and Roll-out

Review the status and sufficiency of plans and activities regarding testing, data transfer, and roll-out in Stara Zagora,

6.1. Testing

Testing to date has been limited to "bench" testing done by the software developers using actual data from Stara Zagora. This has included functional testing and capacity testing using data from Stara Zagora. The previous Rents application has been used in production in Stara Zagora for several years and is well tested. However, even this module had to be rewritten to conform to the new database structure. No users have yet been asked to test any modules for usability, functionality, or validity. The developers have not yet performed any load testing, but given the low expected transaction rates, user load is not likely to be a significant concern.

The Author emphasized to the software developers the criticality of getting several users in each pilot municipality to begin testing each module as soon as it is functional. The Author also discussed the use of quick user interface "wireframe" mock-ups to enable users to test the usability of a proposed user interface design, as well as effective and efficient usability testing by observing users carefully as they attempt to complete routine tasks using the proposed user interface. Early and frequent testing by a broad sample of users is critical to achieve the following objectives

1. Determine whether users will be able to perform all routine operations easily using the proposed user interface

2. Identify requirements that were not identified in earlier system analysis in Stara Zagora and that may vary from one municipality to another

3. Build a sense of ownership among key users to break down potential barriers to the adoption and use of the software in pilot municipalities, and to identify users who can serve as capable and enthusiastic "champions" to promote the use of the software to other municipalities.

It was clear from visits to the other pilot municipalities that these issues are critical to the success of the project and should be addressed as soon as possible. The software developers accepted these suggestions readily, and have scheduled initial visits to each pilot municipality.

The LGI project should help structure these visits and should continue to insist that the software developers work with several users in each pilot municipality to achieve the three objectives listed above.

6.2. Data transfer from existing systems

The scope of work for MAG-GIS requires them transfer data from existing electronic systems to the new property management system. Municipalities are responsible for entering historical data that is not in electronic form. Visits to Karlovo, Gabrovo, and Veliko Turnovo revealed that no two pilot cities use the same software for property registration, payment of rents, or accounting. Database structures and data quality have not yet been examined in any detail in any of these municipalities. MAG-GIS experience in Stara Zagora and other municipalities suggests that there could be serious problems with the quality, consistency, and completeness of existing electronic data. MAG-GIS will produce reports that identify data quality problems, but subject matter experts in each municipality will be responsible for determining how problems should be corrected. Once these decisions have been made and problems have been corrected, MAG-GIS is responsible for transferring the corrected data to the new system.

MAG-GIS based its estimated level of effort for this task on their experience in Stara Zagora. It is now clear to them that they face a wide variety of different issues in different pilot municipalities, and that the level of effort required for correcting problems in existing electronic data may be much greater than they thought when they developed their proposal to the LGI.

MAG-GIS developers are scheduled to visit Karlovo and Gabravo during the first week of September to analyze their existing databases and systems. The software developers will visit Veliko Turnovo as soon as format agreement is reached with the municipality for them to participate as a pilot site. Based on this information MAG-GIS will provide revised estimates for the level of effort required to correct problems and transfer existing electronic data to the new system. This may require adding funds to the MAG-GIS subcontract. If so, this modification should be made while extending the period of performance to the end of December 2006.

6.3. Documentation

As described in §4.2, MAG-GIS has provided the LGI with key technical documentation for the database. Other key document deliverables for this task include a User Guide and a Technical Guide.

The User Guide will provide essential guidance to users by explaining how to complete routine operations, how to generate standard registers and reports, and how to use the system to analyze the management of municipal property. LGI Task Manager Angel Markov is responsible for developing the User Guide. MAG-GIS has provided a software tool for authoring the User Guide. This will enable LGI to produce the User Guide in electronic and hardcopy formats using the same content. The electronic version of the User Guide will be accessible from within the property management software. The Author has provided several example User Guides from other RTI projects, and worked with the LGI Task Manager to develop an initial outline.

The Technical Guide will describe the technical requirements for the system, how to install and configure the software, manage user rights, data storage, and enumerations, how to publish property registers, and how to add optional software modules. The Technical Guide will also include application and data interface specifications, and answers to frequently asked questions. The Author worked with the LGI Task Manager to develop a suggested outline for this document. MAG-GIS is expected to develop this document using the same software tool used to develop the User Guide.

7. Subcontractor Performance

Review the overall performance of the subcontractor, and the subcontractor's likely ability to continue to provide technical support, training, and enhancement.

It is clear to the Author that MAG-GIS is interested in the success of this project. MAG-GIS is dedicated to producing a technically superior product that meets the needs of Bulgarian municipalities and all GoB regulatory requirements. The quality of the database design and client software completed to date is good to excellent. The software developers are efficient in finding third party tools to solve major challenges, such as flexible and powerful reporting.

Software development is behind schedule because MAG-GIS worked to meet the requirements of Stara Zagora for a system that supports ESGRAON and national Cadastre data standards. These additions to the scope of work are extremely useful, but the project does not have time for any further major additions. Some features included in the scope of work may need to be simplified or eliminated to keep the task on schedule. This will require much closer management of this task.

To date the developers have concentrated on designing and developing a sound technical foundation for the system, and developing core forms and functions. The developers have not yet assessed issues concerning transfer of data from existing systems in pilot municipalities, and have not yet involved users in testing the user interface and basic functionality. These two major issues need to be addressed as soon as possible to make sure this task stays on track, and users in all municipalities are involved in system development.

MAG-GIS recently released a significantly enhanced version of GiSExplorer, there advanced GIS software. GiSExplorer is installed in some 30 municipalities. Roughly six (6) municipalities are actively using this software for their digital cadastre systems. MAG-GIS currently provides telephone and on-site technical support for these customers. MAG-GIS will provide unlimited telephone technical support and a limited number of on-site technical support visits each year for paid subscribers to the municipal property management system. Given relatively short travel distances in Bulgaria, MAG-GIS believes it may be able to include average travel costs in the base technical support rate.

The Author and LGI Task Manager discussed technical support policies and issues with the software developers several times. I particular, we raised concerns regarding their ability to maintain acceptable technical support as the number of subscribing municipalities grows, and the possible need to hire a dedicated user support manager responsible for maintaining acceptable performance. The software developers are aware of these issues and are, at least in principle, prepared to deal with them if and when they occur.

8. Relationship between Subcontractor and Stara Zagora

Review the relationship between the subcontractor and the IT department of Star Zagora municipal government.

The software subcontractor continues to have a close, productive working relationship with the IT department in Stara Zagora. Leadership in both organizations remains the same, and

progress over the last 17 months demonstrates that the two parties are continuing to work together well.

9. Plans for Demonstration Version

Review the status and sufficiency of the demonstration version to be delivered by the subcontractor on CD-ROM.

Software development has not yet reached a point where the subcontractor can develop a demonstration version on CD-ROM. The Author, LGI Task Manager, and the subcontractor reviewed plans to develop such a demonstration version when the software has been substantially completed. The subcontractor intends to provide a fully functioning version of the software on CD-ROM. This version will operate for a period of 30 days after it has been installed. The Author suggested that the subcontractor also include a simple self-running demonstration of the software on the CD-ROM. This would enable municipal executives and other officials to learn about the capabilities of the software quickly and easily without having to install a fully functioning version. The subcontractor has prepared a similar self-running demonstration for its GiSExplorer software. This suggestion was accepted by the subcontractor.

10. Licensing, Services, and Pricing

Review plans, status, and understanding with respect to intellectual property rights to the software.

Review the subcontractor's plans regarding licensing, services, and pricing and their likely impact on the adoption and sustained use of the software by increasing numbers of municipalities.

It is clear to the subcontractor, the LGI, and pilot municipalities that the subcontractor will own all copyrights to the municipal property management software resulting from this LGI task. The subcontractor has already investigated and selected a system for issuing and validating unique software license numbers.

Exhibit 2 shows the software installation and support costs proposed by the subcontractor. The annual support cost currently proposed by MAG-GIS is 1,200 BGN. Based on information from site visits to pilot municipalities, this rate is in line with comparable software used by municipalities, and should not be a significant budget issue. Pilot municipalities did not consider this rate to be excessive or express concerns about affordability. The one concern raised in Karlovo was whether licensing costs for the Microsoft SQL Server database software may be a significant added cost. As mentioned in §4.1, the GoB has a Microsoft volume licensing arrangement. This provides access to Microsoft products at substantially reduced costs. LGI will work with Stara Zagora to determine the procedure and pricing for SQL Server.

Exhibit 2 Proposed Pricing for Installation and Annual Support

Activity	Price	Description
Installation	590 BGN	One-time cost for installation and training of one person
5 workstations	1,200 BGN	Annual maintenance, including unlimited telephone support, a limited number (2-3) on-site visits, and all minor and major upgrades to the software
6-15 workstations	1,800 BGN	"
16-25 workstations	2,160 BGN	"
26-50 workstations	3,000 BGN	"

As currently proposed by the subcontractor, paid annual technical support will include unlimited telephone support, a limited number (2-3) on-site visits, and all minor and major upgrades to the software during the coverage period. At least initially, travel costs for on-site visits will be included in the annual support price. The subcontractor currently provides similar support for GiSExplorer.

The subcontractor does have continuing commercial interest in the municipal property management software. While they have a successful geodetic (surveying) business, the revenue from annual technical support to municipalities that subscribe to the municipal property management system is potentially significant. If market penetration reaches half of all municipalities with citizen service centers, total annual revenue for technical support could reach 50,400 BGN. This does not include revenue from new installations or training. This is essential, since the product must be affordable for municipalities while providing sufficient revenue for the developer to encourage the developer to maintain adequate technical support and further enhance the product.

11. Software Usability with Respect to Target Users

Assess the general usability of the application with respect to the capacity and experience of target end-users in municipalities.

The Author reviewed the user interfaces of completed modules and those nearing completion. Major navigation controls are group and ordered logically. Screen and form layouts are clearly arranged and organized logically. There are differences between the current user interface designs for modules 1-6 and modules 7-10. While these two groups of modules are likely to be used by different users, the developer should consider reducing these differences to improve the efficiency of training, documentation, and technical support.

The user interface for the Rents payment module benefits from several years of operation in Stara Zagora. User interfaces for other modules have not yet been tested by users and may not be the most efficient designs for users faced with completing routine operations daily. There is often a conflict between the functional power and flexibility of a user interface design and efficiency for routine operations. It is critical to have users test a user interface design by attempting to use it to perform routine operations. The developer should observe users

carefully as they complete this type of exercise. The developer should take careful notes regarding any difficulties experienced by test users, and any suggestions they have for improving the logic and usability of the user interface from the user's perspective. The Author will work with the LGI Task Manager and the subcontractor to make sure this is done as soon as possible, and is repeated to refine the user interface and build user ownership of the software.

12. Demand for the Application

Assess the current demand for the application in Stara Zagora, based on the municipality's view of its potential usefulness and usability.

Assist LGI-Bulgaria to review and revise plans concerning roll-out to the municipalities of Karlovo and Gabrovo, and additional municipalities not included in the 5 April scope of work (e.g. Veliko Turnovo).

Assist LGI-Bulgaria to review and revise plans to raise awareness of the availability and capabilities of the software among Bulgarian municipalities.

12.1. Demand in Stara Zagora

Demand for the application in Stara Zagora remains very strong. The municipality was nearing the introduction of the electronic Deeds software when LGI began this task in February 2005 to produce an integrated property management system. Stara Zagora is eager to test and begin using the resulting system. Evidence for this can be found in the continuing active involvement of the IT Director and strong statements of support by the Deputy Mayor of Municipal Property and Economic Development regarding the cooperation of the Accounting Department and the availability of personnel for testing the software. In addition, the IT Director is prepared to present the task and progress to date at the conference of the National Association of Municipalities on October 12-14 in Varna.

12.2. Demand in other Pilot Municipalities

During site visits to pilot municipalities we encountered a variety of piecemeal property management systems based on a variety of separate software applications from different sources. No pilot municipality has an integrated system that enables them to publish updated property registers regularly, as required by law, to analyze associated revenues and costs, to transfer revenue and cost data to their accounting system, to meet legal requirements for correspondence to the national cadastre system, or to connect to a digital cadastre system. Each pilot municipality expressed interest in an integrated system that would provide these capabilities. Reaction to the demonstration of the core server modules (modules 1-6), were uniformly positive from personnel who work in the affected municipal departments. Concerns expressed by meeting participants included the following:

1. Recurrent cost of Microsoft SQL Server
2. Transfer of data from existing electronic systems
3. User training
4. Transfer of revenue and cost data from the new system to an existing accounting system

Previous sections of this report have discussed the first two concerns. These, as well as user training, will be resolved during the course of this task.

The last concern, transfer of revenue and cost data to an existing accounting system, is challenging. Of the four municipalities visited, all four are using different accounting software. While the Ministry of Finance offers standard accounting software to municipalities, most municipalities apparently find this software to be clumsy and inadequate. Automatic transfer of

data from the municipal property management system to an accounting system is not in the software subcontractor's current scope of work. The Author discussed this issue in detail with the LGI Task Manager and the subcontractor.

A reasonable approach would be to identify the most common accounting software packages in use, and to develop interface solutions for this subset. In an immature market, software packages in use are not necessarily the best available. The subcontractor could identify one or two accounting software packages that appear to be technically superior. The subcontractor would then work with the authors of these packages to develop data interfaces, and an agreement to cross-market the two software solutions. The Author and LGI Task Manager discussed these options with the software subcontractor.

The subcontractor will assess the level of effort required to develop automated data transfer to the accounting system in Karlovo. The LGI may then consider whether this may be a good investment of available resources.

12.3. Expanding the Number of Pilot Municipalities

The LGI considered adding five municipalities to the four selected already to pilot the property management software. The Author's assessment of progress to date, and a review of the detailed project plan developed during this visit, suggest that this is not feasible. There is not enough time remaining in the period of performance to complete data transfer, training, and other roll-out tasks in five additional municipalities. Also, resources that LGI may have allocated to rolling the system out in five additional municipalities may be needed to resolve data transfer issues in the first four pilot municipalities. Finally, LGI should consider whether it may be a good use of resources to fund development of automatic data transfer with one or two municipal accounting systems, since it is clear that this feature will be in high demand.

12.4. Communication and Promotion

During visits to pilot municipalities it became clear that the LGI team needed a packet of basic information about the project that could be left with each municipality. Such a packet would include information about project objectives, history, schedule, status, stakeholders, software technical requirements, software costs and technical support, training, data transfer, contacts, and answers to frequently asked questions. This packet should help municipalities to find answers to key questions about this task, and to broaden support within the municipal administration. The Author will work with the LGI Task Manager to develop such a packet.

While visits to pilot municipalities other than Stara Zagora should be much more frequent from now on, it should be useful to provide all pilot municipalities with regular updates on progress and scheduled activities. While this could be done through the project web site[10], it may be much more effective to distribute this information to all key stakeholders proactively via regular email updates.

The National Association of Municipalities hosts their annual conference on 12-14 October, 2006. By this date the software should have entered beta testing in pilot municipalities. This is the next national forum at which the software could be promoted. The IT Director of Stara Zagora has expressed interest in presenting the software at this conference. The software subcontractor is likely to participate in this presentation. The presentation may have much greater impact if at least some of the other pilot municipalities could participate in this presentation. Since the software will not be in final release form by this date, it will be important be very clear about the schedule for software release and roll-out in pilot municipalities.

The International Data Group (IDG) hosted an e-government conference in Bulgaria in February 2005. IDG has not yet scheduled a second e-government conference for February, 2007. If such a conference takes place, this should be an excellent event at which to present

[10] http://www.lgi-bg.org/

the municipal property management system, which by that time should have been fully operational in four pilot municipalities for at least two months.

13. Next Steps

13.1. Amending the Software Subcontract

The subcontract with MAG-GIS needs to be amended to extend the period of performance to the end of December. Depending on detailed assessments of the subcontractor and the LGI Task Manager in pilot municipalities, it may also be necessary to add funds to the subcontract for transfer of data from existing electronic systems, and to establish automated data transfer with one or more accounting systems.

13.2. Project Management

The Author worked with the LGI Task Manager to develop a detailed project plan in Microsoft Project. This project plan includes the software development schedule to date, as proposed by the software subcontractor, and additional tasks and task groupings for further requirements analysis in all pilot municipalities, usability and functional testing by users, documentation, data conversion from existing electronic data sources, training, roll-out installations, and routine project management. This project plan shows the release of Version 1.0 on 26 October, the completion of installations in all pilot municipalities and the final report on 28 November. This project plan has now been reviewed with the LGI Project Director, the IT Director in Stara Zagora, and the software subcontractor.

Project management must be consistent and proactive from how through the end of the task. The following are critical to keeping this task on track:

1. Weekly review meetings in Stara Zagora with the IT Director and software developers to check progress against the project plan and to make any adjustments needed to keep the task on schedule.

2. A change management procedure that uses detailed written documents to describe changes and clarifications agreed to by all parties in weekly project status review meetings.

3. Insisting that the software developers spend enough time on each pilot municipality to understand their unique requirements and issues concerning transfer of existing electronic data to the new system.

4. Obtaining support from pilot municipalities for early testing by users, and insisting that the software developers submit modules for testing by users as quickly as possible. The software developers should develop written test guidelines for users. These guidelines should ask users to complete routine tasks using a sample of real data. Users should be asked to add to these test guidelines to incorporate operations that the developers may have overlooked in earlier requirements analysis. The software developers should be present during at least some of this testing to observe users carefully without guiding them. These observations may suggest improvements in the user interface design. This exercise should be repeated during beta testing. This will engage users in all pilot municipalities, engender user ownership, and identify user "champions" who can teach other users and advocate the use of the software within their municipality and even to other municipalities.

13.3. Agreement with Veliko Turnovo

Draft a document, agreement, or memorandum of understanding with Veliko Turnovo sufficient to gain their agreement to serve as a pilot municipality. This is needed before the software developers can begin working with this municipality.

13.4. Work to obtain buy-in and create ownership in all pilot municipalities

Communicate with each pilot municipality regularly and frequently to update them on the status of the project, the project schedule, and actions they need to take to prepare for testing, training, data transfer, installation, and complete transfer to the new system. Visit each pilot municipality as often as possible. Involve personnel in each pilot municipality in testing the software at the earliest possible point. Make sure they see their work and comments reflected in the software. Give them public recognition for being a part of the development process. Identify strong supporters in each municipality and give them opportunities to promote the use of the system to colleagues in their own municipality, and in other municipalities through public fora, such as the conference of the National Association of Municipalities.

13.5. Produce basic project information packet

Produce an information document to provide pilot municipalities with basic information about the LGI and this task. This information in this document should be sufficient to answer all common questions, and should give personnel in each municipality the information they need to gain the support of other personnel and officials within their municipality. This information document should also give municipalities important information they need to prepare for training, data conversion, and software installation.

13.6. Draft User Guide

Draft a User Guide in a form that can be used for online help and as a printed document. The first draft of this document should be completed as software modules are completed. Ideally the first draft of this User Guide should be completed when the software is ready for beta testing by the pilot municipalities.

13.7. Draft User Guidelines for Testing

The Author has provided the LGI Task Manager and the software developers with two examples of detailed written software test plans. It is clear that this task does not have the resources to develop such a detailed test plan. Instead, the software developer should develop simple written guidelines for user testing during the beta test period. These guidelines should explain to users what operations they should perform using the software, what data they should use for testing, and how they should document their findings and suggestions for the developers.

13.8. Draft Training Plan

In February 2005 the Author, LGI Task Manager, and IT Director in Stara Zagora developed a draft training plan. This plan now needs to be revised, developed into an operational document, and discussed with each pilot municipality. This will provide pilot municipalities and LGI with information needed to schedule and prepare for this important training.

13.9. Communication and Promotion

The IT Director in Stara Zagora expressed willingness to present the municipal property management software at the conference of the National Association of Municipalities on 12-14 October 2006. This should be confirmed with the IT Director and the software developer, who should be present at the presentation. In the course of beta testing the LGI Task Manager should try to identify personnel in other pilot municipalities who might participate in this presentation.

Annex A: Principal Contacts

Local Government Initiative

Emil Savov, Project Director
Angel Markov, LGI Task Manager
Gordon M. Cressman, LGI Consultant
Yanka Dimova, LGI Translator

Stara Zagora

Sasha Krusteva, IT Director
Tihomir Dimitrov, Deputy Mayor, Municipal Property and Economic development
Ilia Zlatev, Deputy Mayor, Public Services, Law and order.

Karlovo

Dimitar Katcev, Deputy Mayor, Education and Social Services
Neli Staneva, Head of Directorate European Integration, Municipal Property and Housing Policy
Hristina Ganchozova, Head of Municipal Property Department
Stefan Stefanov, Head of Human Recourses
Vania Petrova, Head of Budget and Finance
Vladimira Videlova, Expert Budget and Finance
Head of IT Department

Veliko Turnovo

Stefan Botev, Deputy Mayor, Economic Development and Investments
Nikolai Mitkov, Expert Urban Planning
Svetozara Stefanova, Head of Budget and Finance
Marinela Dzhartova, Head of Municipal Property
Stefan Karaivanov, Director of IT

Gabrovo

Stiliana Tincheva, Deputy Mayor, Municipal Property and Economic Development
Pankov, Head of Municipal Property Department
Parashkevova, Expert Urban Planning
Elena Koleva, Legal Adviser to the municipality
Hristo Hristov, Legal Expert to the municipality
Elena Miteva, Legal Expert to the municipality
Malina Mircheva, Expert Municipal Property – Property Registration
Zheliazka Ivanova, Expert Municipal Property - Property Registration
Mareva, Expert Municipal Property- Rents
Gurbova, Expert Municipal Property- Rents
Stefan Kolev, Director of IT

Annex B: Meetings

Date	Location	Participants	LGI Participants
Monday 21 August 2006	LGI Office, Sofia		Angel Markov, LGI Task manager Gordon M. Cressman, LGI Consultant
Tuesday 22 August 2006	Stara Zagora	Sasha Krusteva, Head, IT Department Rumen Sartonev, Project Leader, MAG-GIS Kyril Dimov Vassilev, Programmer, MAG-GIS Georgi, Stoilov Ivanov, Programmer, Arion Tihomir Dimitrov, Deputy Mayor, Municipal Property and Economic Development Ilia Zlatev, Deputy Mayor, Public Services, Law and Order	Angel Markov, LGI Task Manager Gordon M. Cressman, LGI Consultant Yanka Dimova, LGI Translator
Wednesday 23 August 2006	Stara Zagora	Sasha Krusteva, Head, IT Department Rumen Sartonev, Project Leader, MAG-GIS Kyril Dimov Vassilev, Programmer, MAG-GIS Georgi, Stoilov Ivanov, Programmer, Arion	Angel Markov, LGI Task Manager Gordon M. Cressman, LGI Consultant Yanka Dimova, LGI Translator
Thursday 24 August 2006	Karlovo	Dimitar Katcev, Deputy Mayor, Education and Social Services Neli Staneva , Head of Directorate European Integration, Municipal Property and Housing Policy Hristina Ganchozova, Head of Municipal Property Department Stefan Stefanov, Head of Human Resources Vania Petrova , Head of Budget and Finance Vladimira Videlova, Expert Budget and Finance Head of IT Department	Angel Markov, LGI Task Manager Gordon M. Cressman, LGI Consultant Yanka Dimova, LGI Translator

Date	Location	Participants	LGI Participants
Friday 25 August 2006	Veliko Turnovo Gabrovo	Stefan Botev, Deputy Mayor, Economic Development and Investments Nikolai Mitkov, Expert Urban Planning Svetozara Stefanova, Head of Budget and Finance Marinela Dzhartova, Head of Municipal Property Stefan Karaivanov, Head of IT Department Stiliana Tincheva, Deputy Mayor, Municipal Property and Economic Development Pankov, Head of Municipal Property Department Parashkevova, Expert Urban Planning Elena Koleva, Legal Adviser to the municipality Hristo Hristov, Legal Expert to the municipality Elena Miteva, Legal Expert to the municipality Malina Mircheva, Expert Municipal Property – Property Registration Zheliazka Ivanova, Expert Municipal Property - Property Registration Mareva, Expert Municipal Property- Rents Gurbova, Expert Municipal Property- Rents Stefan Kolev, Director of IT	Angel Markov, LGI Task Manager Gordon M. Cressman, LGI Consultant Yanka Dimova, LGI Translator
Saturday 26 August 2006	LGI Office, Sofia		Angel Markov, LGI Task manager Gordon M. Cressman, LGI Consultant
Monday 28 August 2006	LGI Office, Sofia		Emil Savov, Project Director Angel Markov, LGI Task manager Gordon M. Cressman, LGI Consultant

Annex C: Summary of Software Development Status

Module	Description	Development Status	Testing Status	Comments
(1) Server module 1: **Real Properties Registration**, Editing, and Deletion Module	Used to register and describe all properties (real properties, buildings, advertisement boards, temporary/movable booths, etc.). Each real property will be classified and described by a classification, which is set in advance. Only authorized users will be able to delete and edit the information.	Alpha	Functions and user interface tested by programmers.	
(2) Server module 2: Registration, Editing and Deletion of **Physical and Legal Entities** Module	The module will allow registering of all entities related to the municipality or property/properties. Only authorized users will be able to delete and edit the information.	Alpha	Functions and user interface tested by programmers.	
(3) Server Module 3**: Attached Documents**	This module enables the user to record all contractual relationships of the municipality in terms of rents, sale, swap deals, ending of co-ownership, partition of property, contribution in-kind in the capital of commercial companies, issuance of construction permits for new construction, adding a storey to an existing building, adding an adjacent element to an existing building, providing property in exchange for canceling debt, pledging of properties, establishing easement rights, concessions for public municipal properties, and any documents related to physical and legal entities and properties. This module enables the entry and management of document metadata and attachment of documents in electronic form (scanned files, Word documents, Excel spreadsheets, vector CAD drawings, text files, and other formats).	Alpha	Functions and user interface tested by programmers.	
(4) Server Module 4: **Addresses** Module	The module will manage data related to addresses of municipal properties, addresses of physical and legal entities and other addresses with which the municipality is in some relations and addresses of properties related to other activities of the municipality – for example issuance of construction permits and other services.	Alpha	Functions and user interface tested by programmers.	

Module	Description	Development Status	Testing Status	Comments
(5) Registration, correction and deletion of **additional data list of items** (articles/categories and **user rights** for them) (Management of look-up tables or enumeration lists)	This module will include standard nomenclature and classifications needed for describing the other data. The nomenclatures, established by the standards for creation and exchange of cadastre information in the Republic of Bulgaria, will be used. This is with a view to guarantee the consistency of the system with the cadastre map, which is being developed in the country. The system will allow editing and adding to the standard nomenclatures, as well as creation of new ones.	Alpha	Functions and user interface tested by programmers.	Additional development time was invested in this module to make it compatible with data from the official government Cadastre system and the offices that register Physical and Private persons (ESGRAON). Additional time was invested to develop methods for importing updated data form these services into the software while preserving existing data in the municipality. As a result of these two major technical changes the project is approximately 1.5 months behind the original schedule.
(6) Municipal Property **Deeds** Module	This module enables users to register, manage, and locate deeds for public and private physical property. This module will support the new format of the deeds, developed by Ministry of Regional Development and Public Works (MRDPW), as well as older existing formats	Alpha	Functions and user interface tested by programmers.	Software for registering, managing, and locating deeds had been nearly completed by MAG-GIS for Stara Zagora at the beginning of 2005. This module is being rewritten to confirm to the new structure of the database and software.

Module	Description	Development Status	Testing Status	Comments
(7) Municipal Property **Revenues** Module	This module will be developed based on the development of the Municipal Property Deeds Module. The realization of any municipal property deal will be described as a link between contracting parties. The revenues from such deals, which could be one-time sale revenue or several consecutive payments at different periods of time, will be registered. The revenue component will track the financial expression of: • -sales; • exchange for another property, (in which case value from the expert's evaluation is entered and a note is made); • ending of co-ownership over a property; • partition of a property; • contribution in kind in the capital of a joint stock company; • issue of construction permits • issue of construction permits for building an additional storey or an adjacent element to a building; • providing a property in exchange for canceling a debt (in which case a decision must be made whether to enter the amount of debt cancelled or the value from the expert's evaluation) • establishing of easement rights; • concessions for public municipal properties; • - renting relations.	Alpha	Functions and user interface tested by programmers.	They are working on this. Will take 10 days to reach Beta 2 stage. It will be ready by the time Gordon comes to BG!
(8) Municipal Property **Revenues Analysis** Module	The module will allow visualization of available revenue data for deals or economic activity with municipal property, and preparation of reports for revenue analysis and reporting. This module will be developed based on the existing module for analysis.	Alpha	Functions and user interface tested by programmers.	
(9) Municipal Property **Costs** Module	This module will enable the municipality to enter and track costs, which will be generated as financial resources and quantities (in-kind indicators) from each municipal property. The module will store information generated in the accounting department of the municipality. That data shall be generated for each cost reporting/invoicing for the relevant property and entered manually.	Alpha	Functions and user interface tested by programmers.	
(10) Municipal Property **Cost Analysis**/Statistical Information Module	This module will process data and prepare reports to track costs per month and summarize data for specific periods. It will monitor the values of the in-kind indicators: sq. m., cubic meters, pupils, children in the kindergartens, kWh energy, # of phone impulses, and it will calculate average cost per type of property. The module will compare the collected results for a respective property with the average data for this type of property. The specific indicators and their formats will be determined during software development.	Requirements analysis underway		This module will be completed shortly after the Revenue analyses module because it will use many of its functions. It will not be tested before "municipal cost module" is completed.

Module	Description	Development Status	Testing Status	Comments
(11) Municipal **Property Efficiency** Module	We still do not have a clear idea how this module is going to look like. This is the last module that will be developed. It will reach Betta 1 stage 5 days after all other cost and revenue modules are complete. The costs and revenues for each specific property will be compared in the two Analysis modules in order to find out the level of their efficient use.	Requirements analysis underway		
(11) Automatic Processing for Entered Data Module (**Data storage management**)	This module will include functions for automating routine data management, including generating any special reporting tables, exporting data to other systems, and archiving historical data to manage data storage and system performance.	Requirements analysis underway		This module should reach beta stage 5 days after all other cost and revenue modules are complete. This module is being developed concurrently with the other cost and revenue modules.

Annex D: Municipal Citizen Service Centers in Bulgaria[11]

Region	Municipality	Financial and Technical Support
BLAGOEVGRAD	Petrich	own
	Blagoevgrad	own
	Goce Delchev	own
BURGAS	Ajtos	own/PHARE
	Bourgas	FLGR/USAID
	Tsarevo	own
VARNA	Beloslav	FLGR/USAID
	Varna	own
	Dolni Chiflik	FLGR/USAID
	Provadia	FLGR/USAID
VELIKO TURNOVO	Veliko Turnovo	FLGR/USAID
	Gorna Oryahovica	FLGR/USAID
	Elena	FLGR/USAID
	Svishtov	FLGR/USAID
VIDIN	Vidin	FLGR/USAID
	Kula	FLGR/USAID
VRATSA	Byala slatina	FLGR/USAID
	Vratza	FLGR/USAID
	Kozloduy	FLGR/USAID
	Mezdra	FLGR/USAID
GABROVO	Gabrovo	own
	Dryanovo	FLGR/USAID
	Sevlievo	SDC/FLGR
	Tryavna	SDC/FLGR
DOBRICH	**Balchik**	own
	Dobrich	FLGR/USAID
KARDJALI	Kardjali	own
	Chernoochene	FLGR/USAID
LOVECH	Lovech	own
	Teteven	FLGR/USAID
	Troyan	FLGR/USAID
	Yablanica	FLGR/USAID
	Letnica	FLGR/RAM CSP/SCD
MONTANA	Vachedram	FLGR/USAID
	Montana	FLGR/USAID
	Boichinovci	own/ FLGR consulting

[11] Foundation for Local Government Reform, 2005

Region	Municipality	Financial and Technical Support
PAZARDJIK	Pazardjik	own
	Panagiurishte	FLGR/USAID
	Baracigovo	own
PERNIK	Pernik	own
PLEVEN	**Kneja**	own/ FLGR consulting
PLOVDIV	Plovdiv	
	Asenovgrad	own
	Rakovski	
	Kaloyanovo	own/ FLGR consulting
	Karlovo	
	Hisar	FLGR/USAID
RAZGRAD	Razgrad	own
RUSE	Ruse	FLGR/USAID
SILISTRA	Tutrakan	FLGR/USAID
	Glavinica	НСОРБ
	Silistra	FLGR/USAID
SLIVEN	Sliven	FLGR/USAID
	Tvardica	FLGR/USAID
	Elhovo	FLGR/USAID
SMOLIAN	**Smolian**	own
	Zlatograd	FLGR/USAID
	Chepelare	own
SOFIA CITY	**Sredetz**	own
	Vazrajdane	FLGR/USAID
	Triadica	FLGR/USAID
GREATER SOFIA	Botevgrad	FLGR/USAID
	Bojurishte	FLGR/USAID
	Elin pelin	own/ FLGR consulting
	Ihtiman	own
	Etropole	FLGR/RAM CSP/SCD
	Pravetz	own/ FLGR consulting
STARA ZAGORA	Stara Zagora	FLGR/USAID
	Radnevo	Open society
	Kazanlak	own
	Nowa zagora	own
TARGOVISHTE	Antonovo	FLGR/USAID
	Popovo	FLGR/USAID
	Targovishte	own
HASKOVO	Dimitrovgrad	FLGR/USAID
	Haskovo	own
SHUMEN	**Venetz**	FLGR/USAID
	Shumen	own
	Novi Pazar	FLGR/SDC
YAMBOL	Yambol	own
	Straldja	own
	Elhovo	FLGR/USAID

Legend

Petrich..... Municipality with official public web site
Dolni Chiflik..... Municipality without official public web site

Abbreviations

USAID ..... United States Agency for International Development
FLGR..... Foundation for Local Government Reform
SDC..... Swiss Agency for Development and Cooperation
NAMRB ..... National Association of the Municipalities in the Republic of Bulgaria
RAM CSP..... Regional Association of Municipalities Central Stara Planina

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IDABC Work Programme 2005-2009, Third Revision, SECTION I, Project of common interest, Horizontal measures, IDABC, European eGovernment Services, 14 August 2006, 121 pages.

Issues Paper, Task Force on Information and Communications Technology for Development, United Nations Development Programme, Center for the Study of Democracy, August 2001, 42 pages.

Annex F: Reference Web Sites

Bulgaria Development Gateway
www.bulgaria-gateway.org/?lang=en (English, Bulgarian)

Coordination Center for Information, Communication and Management Technologies
www.ccit.government.bg/

Department of Civil Registration and Administrative Services
grao.government.bg/ (Bulgarian)

eGovernment Good Practice Framework, European Commission
www.egov-goodpractice.eu/ (English)

Foundation for Local Government Reform
www.flgr.bg (English, Bulgarian)

Gabrovo Municipal Web Site
www.gabrovo.bg/BG.php (Bulgarian, English, German)

Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens
europa.eu.int/idabc/ (English)

Karlovo Municipal Web Site
www.bulgaria.domino.bg/karlovo/ (Bulgarian, English)

National Association of Municipalities in the Republic of Bulgaria
http://www.namrb.org/english/ (English, Bulgarian)

Stara Zagora Municipal Web Site
www.city.starazagora.net/ (Bulgarian)

Veliko Tarnovo Municipal Web Site
www.veliko-turnovo.bg/obs/ (Bulgarian)